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and making it impossible to think of returning to bring on shore the part of the outfit left on the ice.

A stone hut was built, and in this the twenty men passed the winter, using for food the meat of seals and penguins that could be obtained, and also catching a good number of fish, which proved a very welcome change. What was most scarce was fuel, as the seals were by no means numerous during the winter. It was a hard life; but happily all were in good health, except the young Norwegian seaman Wenersgaard, who died of heart affection in the middle of the darkness and the gales of the winter on June 7. It had long been arranged that a small party should start for the winter station to bring us news of the fate of the *Antarctic* as soon as the ice would allow. On October 31 they started, and, passing the site of the winter hut at Mount Bransfield, where they learnt the news of how that party had spent the winter, they arrived at our station just at the last moment when we were going to leave definitely the place and the region.

And now came the last great event in the story of the expedition. After having embarked on the *Uruguay*, the 10th, we passed very early the next morning Paulet Island, awakening its involuntary inhabitants with the steam whistle of our ship, The effect was instantaneous—in a second the beach was alive with men, still unable to understand their luck. The change was too great, after all their privations, with the dark prospect of the future, to be suddenly awakened out of their sleep, placed in the midst of civilization, and at the same time know that all their companions from the two other winter stations were well, and all this to happen so early in the year, when no relief could have been expected.

It was undoubtedly a great proof of the awakened interest of the Argentine nation and of the capacity of its navy to send this expedition, and to us the stay on board has only bright remembrances, for we were received as I believe has rarely been the lot of a shipwrecked expedition. Passing the winter station of Mount Bransfield to pick up the collection left there, we arrived at the port of Santa Cruz on November 22, and during the following hours the telegraph announced to the world the news of our return.

NOTES ON GEOLOGICAL SURVEYS.

West Virginia.—Volume I of this survey was issued in 1899, under the direction of J. C. White, State Geologist. It contains records of levels above tide and of the variations of the magnetic compass, but is chiefly devoted to petroleum and natural gas, including the local history of development, the geological relations, and detailed records of many borings. Volume II bears the date 1903, and is chiefly occupied with the coal formations of the State. Incidentally, the author emphasizes the richness in common minerals, soils, and forests of a State which is quite lacking in costly metals. Ten to twelve thousand square miles is given as an estimate of the productive coal territory of West Virginia. The author expresses the interesting opinion that the coal measures may originally have extended to the Blue Ridge, across the Shenandoah Valley. The first statistics of production belong to 1873, with 672,000 short tons. The State passed Ohio in 1895, and will soon outstrip Illinois, and become, in this product, the second State in the Union. In 1901, 24,000,000 short tons were mined. Of this amount between three and four million tons were made into coke. It is expected to follow with Volumes III and IV on the clays, ores, building stones, and other mineral products of the State, which has entered into co-operation with the United States Geological Survey to carry on topographic map work.

NEBRASKA.—Volume I of the Nebraska Geological Survey has recently been received, Professor Erwin H. Barbour of the State University of Lincoln being State Geologist, with a considerable corps of assistants. The present volume is a non-technical, introductory account of the physical features of the State, based on the voluntary investigations of the past ten years. Much of this work was due to the private beneficence of Hon. Charles H. Morrill, of Lincoln. The failure of the citizens of the State to provide for the study of its natural resources is attributed to its poverty in coal and the various metals. But, to atone for this lack, there are abundant clays, cements, ochres, and building stones needing development. To this end a vigorous appeal is made, and it is stated, for example, that single individuals have spent twenty thousand dollars prospecting for coal, chiefly in the Pierre shale, which the geologist knows to be barren. Studies of the physiography and hydrography of Nebraska follow, which should be of much service to teachers and others who wish to know the geography of the State. There are also chapters on stratigraphy and mineral resources.

WASHINGTON.—Few States offer such variety of physical features and mineral wealth to the observer as this Far Western commonwealth. Volume I was published in 1902, embodying the work of 1901. Professor Harry Landes of the State University at Seattle is State Geologist. The report includes a summary view of the geology, the non-metalliferous resources, the iron, coal, and water. Sixteen pages are occupied with a bibliography of the geology of Washington. Volume II gives an extended account of the building and ornamental stones and further information concerning the coal.

MARYLAND.—The Survey in the State was established in 1896, and has made swift and continuous progress. Its publications are in excellent form and already make an extended series. The Survey sustains an intimate relation to the Johns Hopkins University through the State Geologist, Professor W. B. Clark, and his colleagues in the geological faculty.

Volume I bears the date 1897 and is introductory in character. It includes the origin and plan of the Survey; a historical sketch of the investigation of the physical features of Maryland; an account of the general physiography and geology; bibliography and cartography; and a report on magnetic work. The bibliography gives an extended series of titles occupying 170 pages, beginning with John Smith's description of Virginia in 1612.

Volume II, 1898, in addition to administrative reports, includes the building and decorative stones of Maryland, by George P. Merrill and Edward B. Matthews; and a report on Cartography, by Gannett and Matthews. A large section of the volume is occupied by Mr. Matthews' detailed story of the maps and map-makers of Maryland.

Volume III marks the undertaking of systematic work on the highways of the State, and is a model piece of work. Professor Clark discusses the general problems suggested by the climate, topography, and geology in their bearing on road construction. Highway legislation is treated historically in a further essay, and present conditions are outlined in general and by counties. Other chapters deal with construction methods, road-metal tests, and road administration. A supplement gives in full the laws of Maryland relating to highways.

Volume IV is of date 1902, and includes the Paleozoic history of the State, a further report on highways, and a report on clays, by Dr. Heinrich Ries. The last is a detailed discussion occupying 300 pages. In 1901 a volume on the Eocene of Maryland was published, and separate volumes give the areal geology of Allegany, Garrett, and Cecil counties, with maps in cases.

INDIANA.—The 26th and 27th annual reports for 1901–02 add another volume to the extended series put forth by this Survey for many years. The Survey has its headquarters at Indianapolis and Mr. W. S. Blatchley is State Geologist. The first special paper describes more than 80 mineral springs within the State. In this connection Dr. Robert Hessler contributes an essay on the medicinal properties and uses of Indiana mineral waters. The remaining special papers of the 26th report deal with the geology of Southern Indiana and with the gas and petroleum industries. A somewhat surprising title, when we come to the 27th report, is "Gold and Diamonds in Indiana," by Mr. Blatchley. These minerals are, however, all due to transportation by ice, so far as their presence in Indiana is concerned. The drift furnishes gravels which, in limited areas, yield 25 to 40 cents per cubic yard, and might well be worked with approved hydraulic methods. The diamonds are of scientific rather than commercial interest, being small and found in the search for gold.

IOWA.—A State containing a simple series of Paleozoic rocks, overlain by glacial drift and prairie soils, might, to the average reader, promise little to geological investigation. To such it would be a revelation to observe the work of the present Survey, which was begun in 1892. As in many States, the State Geologist is a professor of geology, Dr. Samuel Calvin of the Iowa State University. Thirteen volumes of the annual reports have now appeared upon the various economic and more purely scientific phases of Iowa geology. A further indication of the fruitfulness of this field is seen in the 250 pages of bibliography which record studies previous to 1892. The reports deal chiefly with general stratigraphy, the glacial drift, and the areal geology by counties. The chief economic materials are the soils, coal, gypsum, road metals, clays, water, lead, and zinc. Since 1899 iron in moderate quantities has been produced.

An interesting chapter in Volume XIII, the annual report for 1902, discusses the lithographic limestone of Mitchell County. The principal layer in the quarry in question is quite free from the crystalline inequalities which often vitiate the limestone for lithographic use. It has the desirable intermediate degree of hardness, and agrees well with Bavarian samples in absorption tests. The Iowa rock is of Devonian age, while the Bavarian is Jurassic, some of the Texan is Cretaceous, and that from Kentucky is believed to be Carboniferous. The layer in question is about two feet thick, but there is some question whether thin slabs can be prepared whose surfaces will not cross minor bedding planes that show undesirable foreign material. The examination, however, was made without special quarrying, and it is hoped that more systematic work will develop practicable material. Lithographic views of the quarries in question are given in the report as executed upon the stone under discussion.

UNITED STATES GEOLOGICAL SURVEY.

Cape Nome and other Parts of Seward Peninsula, Alaska.— The United States Geological Survey has, for several years, pursued actively the study of Alaskan geology and geographic conditions. Naturally, the gold discoveries of the Yukon and Cape Nome have lent impetus to the work. In 1900 Mr. Alfred H. Brooks and his assistants, Mr. G. B. Richardson and Mr. A. J. Collier, made a reconnaissance survey of the southern portion of the Seward peninsula, including Cape Nome. The report is found in House Document, Vol. 124, 56th Congress. The Seward Peninsula is the westernmost land of North America, and contains 20,000 square miles, of which 6,000 are embraced in Mr. Brooks' report.

The coastal plain and considerable upland areas are true tundras, and it thus appears that strictly plain regions are not all that must be embraced under this name, as is often implied. The peninsula is deeply incised on the west by the basins of Port Clarence and Imuruk, and by the lowlands of Kuzitrin and Kruzgamepa Rivers. North of this belt of lowlands and inclosed basins the York mountain tract stretches westward to Cape Prince of Wales, the most neighbourly point to the Asiatic continent. South of the belt of depression is the area concerned in this report. A central mass of highlands is much dissected by streams flowing north, south, and west. Midway of this seaward southern side is Cape Nome, and along the sea border east and west are either coastal plains of moderate width or wave-cut cliffs formed by the sea. The mountains are low, from 2,000 to 4,000 feet, with one summit, Mount Osborn, attaining about 4,700 feet.

Marine terraces and flat uplands show that the western part of the peninsula has, in comparatively recent times, been depressed below sea level, and the recovery has taken place with intervals of stability which allowed the carving of benches at various horizons. The highest of these benches observed is 1,700 feet above the sea. Others appear at 1,600 and 1,200 feet. Several levels are noted between 200 and 800 feet. Still lower terraces, as at 25, 50, and 100 feet, were observed. The main features of the topography were essentially completed before the submergence. The higher terraces merge with the flood plains of the larger rivers. Glaciation has been local, the ice occupying valleys in the mountain areas, producing some moraines and local changes of drainage.

The sedimentary rocks are referred to the Ordovician and Mesozoic, with numerous periods of igneous intrusions and dynamic disturbances. The Pleistocene deposits are given a fourfold grouping: (1) Deposits of present rivers and along present shore lines; (2) marine and river terraces and the coastal plain; (3) glacial; (4) ground ice and residual soil. It will appear at once that the high-level gravels have a relation to the extension of placer working on the peninsula.

The reader will find at pages 64–69 an interesting account of the growth and conditions of the mining camps at Cape Nome, and in other parts of the region. At the time of Mr. Brooks' visit in June, 1900, 15,000 people were gathered at Nome. The most serious limit to human convenience there is exposure to the open sea and the complete absence of harbour facilities.

It was, of course, a prime practical end to determine the sources of the placer gold. On this the author states that the region is distinctly mineralized. Veins and lenses of quartz are common in the schists, showing, in some cases, chalcopyrite, pyrite, galena, and gold. The dust is locally derived, for nuggets are often too large and rough to have admitted of much carriage by water. Nuggets are also found still attached to the matrix of quartz and schist. The point is emphasized that large thicknesses of the rocks have been removed by denudation, and from these the gold has been concentrated. We need not wonder, therefore, if no single outcrops have been found in which specially rich veins appear.

The placer beds of the Cape Nome district are of several kinds—the famous beach deposits; the gravels in neighbouring creeks and gulches; the high bench gravels, and the gravel plains. The large yields have come from the beach and the stream courses, but the high benches will probably become important producers. Some of the claims near the source of Dexter Creek were so rich that their owners could afford to work them with water brought two miles at a cost of $2.50 a barrel. Local details for numerous localities in the central and southern part of the peninsula will be found in the report. The topography is shown by pictures, and in parts by contoured maps, and the geology is given in colours, so far as it could be worked out in a short Alaskan summer. There is also a map denoting areas of actual or possible gold production.

Mr. Arthur J. Collier adds a few pages of notes on the climate. As the oceans on the north and south differ widely in temperature, and the mountains are low, alternate movements of waters and of the atmosphere from the contrasting sea make a variable climate, which is less favourable, although averaging a little warmer than in the Klondike and adjacent parts of the Yukon basin. Mr.

Collier also gives a review of the vegetation, which is of interest to botanists and others. What may fairly be called spruce forests occur in the eastern part of the peninsula. The trees are found along the rivers, and some were one foot in diameter and 50 feet high. Six species of grass were found, a partial list, and abundant lichens, known as reindeer moss.

The Norton Bay region at the southeast base of the Seward Peninsula was assigned to Mr. W. C. Mendenhall for geological reconnaissance. A fact of much physiographic interest is brought out, namely, that here the movement of the land has been downward, in contrast to the emergence of the more westerly areas. Irregular shore lines, drowned valleys, and tied islands furnish the evidence of this movement. The axis on which the peninsula turned appears to run north and south, approximately, from Cape Espenberg to Cape Darby.

NORTHWESTERN PORTION OF SEWARD PENINSULA.—Work in this area was assigned to Mr. Collier in 1901, and his results are published as Professional Paper No. 2, U. S. Geological Survey, 1902. It will be remembered that Mr. Brooks made brief studies in this territory, as among the York Mountains, the previous summer. He had found stream tin, and efforts were made in 1901, though without success, to find the bed-rock sources of this mineral.

The north or Arctic shore of the peninsula differs from the south shore in showing a coastal plain 5 to 30 miles wide, bordered by lagoons and barrier beaches. The inland basins, east of Port Clarence, are like the coastal plain, but represent lakes or estuaries filled with detrital matter. Remains of the mammoth have been found both in the inland plains and in those of the Arctic shore. As farther to the south, so here the Pleistocene consists of beach-beds, terraces, and flood-plains of rivers, and high benches and terraces. There is no evidence of general glaciation, residual soils and gravels of local origin being the rule.

The general conditions of the bed-rock geology are similar to those of the southern district. The economic interests of the Arctic side of the peninsula do not compare with those of the Cape Nome slope. A few small placer areas have been worked, and are here described. These, with doubtful areas, and others believed to be barren, are shown upon the map. The two reports add much to our knowledge of the geography of this secluded region, and show also that considerable values will yet be harvested by more systematic exploitation and the use of more refined methods.

Unfortunately, each winter's work of the sea blots out the traces of previous work along the Nome beaches, and leaves little clue as to where pay dirt will be found at the opening of the next brief summer.

A. P. B.

THE EIGHTH INTERNATIONAL GEOGRAPHIC CONGRESS.

The National Geographic Society has issued the following announcement:

PRELIMINARY ANNOUNCEMENT, EIGHTH INTERNATIONAL GEOGRAPHIC CONGRESS, WASHINGTON, 1904.

HUBBARD MEMORIAL HALL,
WASHINGTON, D. C., U. S. A.,
January, 1904.

The Executive Committee of the Seventh International Geographic Congress, held in Berlin in 1899, having voted to convoke its next session in Washington, the National Geographic Society, as the organization responsible for the management of sessions in the United States, will welcome the Eighth Congress and its friends to the National Capital of the United States in September, 1904.

Geographers and promoters of geography throughout the world, especially members of geographic societies and cognate institutions of scientific character, are cordially invited to assemble in Washington, D. C., on September 8th, 1904, for the first international meeting of geographers in the Western Hemisphere.

On the invitation of the National Geographic Society the following societies join in welcoming the Congress and undertake to co-operate toward its success, especially in so far as sessions to be held in their respective cities are concerned:

The American Geographical Society.
The Geographic Society of Baltimore.
The Geographic Society of Chicago.
The Geographical Society of California.
The Mazamas.
The Peary Arctic Club.
The Geographical Society of Philadelphia.
The Appalachian Mountain Club.
The Geographical Society of the Pacific.
The Sierra Club.
The American Alpine Club.
The Harvard Travellers Club.

The Congress will convene in Washington on Thursday, September 8th, in the new home of the National Geographic Society, and will hold sessions on the 9th and 10th, the latter under the auspices of the Geographic Society of Baltimore. Leaving Washington on the 12th, the Members, Associates, and Guests of the Congress will be entertained during that day by the Geographical Society of Philadelphia, and on the 13th, 14th and 15th by the American Geographical Society of New York, where